

WHAT IS CLAIMED IS:

1. A system for manufacturing a membrane electrode assembly for a fuel cell comprising:

a catalyst solution preheating device preheating a cathode catalyst solution and an anode catalyst solution;

a carrying gas preheater preheating a carrying gas;

a cathode catalyst solution spray nozzle supplied with the cathode catalyst solution preheated by the catalyst solution preheating device and the carrying gas preheated by the carrying gas preheater and configured to spray the supplied cathode catalyst solution; and

an anode catalyst solution spray nozzle supplied with the anode catalyst solution preheated by the catalyst solution preheating device and the carrying gas preheated by the carrying gas preheater and configured to spray the supplied anode catalyst solution.

2. The system of claim 1, wherein the catalyst solution preheating device heats the cathode catalyst solution and the anode catalyst solution at a temperature in a range of $0.6 \times BP$ to $0.95 \times BP$, where BP is a boiling point of a solvent of the catalyst solution.

3. The system of claim 1, wherein the catalyst solution preheating device comprises:

a cathode catalyst solution preheater preheating the cathode catalyst solution; and

an anode catalyst solution preheater preheating the anode catalyst solution.

4. The system of claim 3, wherein the cathode catalyst solution preheater heats the cathode catalyst solution at a temperature in a range of $0.6 \times BP$ to $0.95 \times BP$, where BP is a boiling point of a solvent of the catalyst solution.

5 5. The system of claim 3, wherein the anode catalyst solution preheater heats the anode catalyst solution at a temperature in a range of $0.6 \times BP$ to $0.95 \times BP$, where BP is a boiling point of a solvent of the catalyst solution.

6. The system of claim 1, wherein the cathode and anode catalyst
10 solution spray nozzles operate to alternately spray the catalyst solution, and wherein while one of the cathode and anode catalyst solution spray nozzles sprays the catalyst solution, the carrying gas is supplied to the other spray nozzle.

7. The system of claim 1, wherein the carrying gas preheater heats
15 the carrying gas at a temperature higher than the boiling points of the cathode catalyst solution and the anode catalyst solution.

8. The system of claim 1, wherein the carrying gas is one of argon, helium, nitrogen, and air.

9. A method for manufacturing a membrane electrode assembly for
20 a fuel cell comprising:

preheating a cathode catalyst solution;

preheating an anode catalyst solution;

preheating a carrying gas;

spraying the preheated cathode catalyst solution through a cathode

catalyst solution spray nozzle using the preheated carrying gas; and

spraying the preheated anode catalyst solution through an anode catalyst solution spray nozzle using the preheated carrying gas.

10. The method of claim 9, wherein the spraying of the preheated
5 cathode catalyst solution and the spraying of the preheated anode catalyst solution are alternately performed, and wherein while one of the spraying of the preheated cathode catalyst solution and the spraying of the preheated anode catalyst solution is being performed, the carrying gas is supplied to the one of the cathode and anode catalyst solution spray nozzles that is not spraying the
10 catalyst solution.

11. The method of claim 9, wherein in the preheating of the cathode catalyst solution, the cathode catalyst solution is heated at a temperature in a range of $0.6 \times BP$ to $0.95 \times BP$, where BP is a boiling point of a solvent of the catalyst solution.

12. The method of claim 9, wherein in the preheating of the anode
15 catalyst solution, the anode catalyst solution is heated at a temperature in a range of $0.6 \times BP$ to $0.95 \times BP$, where BP is a boiling point of a solvent of the catalyst solution.

13. The method of claim 9, wherein in the preheating of the carrying
20 gas, the carrying gas is heated at a temperature higher than the boiling points of the cathode catalyst solution and the anode catalyst solution.